Missouri River
2014 Flood Response and Action Plan
(Updated from 2012 and 2013 Plan)

City of Bismarck, North Dakota

Bismarck

Apex Engineering Group

Certification

Missouri River | 2014 Flood Response and Action Plan
(Updated from 2012 and 2013 Plan)

City of Bismarck

Apex Project Number 12.118.0059

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of North Dakota.

Scott M. Schneider, PE, CFM

3-18-14
Date

February 2014

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Purpose of the Study

The purpose of the study is to provide an action plan that will outline the specific temporary flood protective works including equipment and materials that will be mobilized to fight various flood scenarios within the City of Bismarck, should they occur in the spring of 2014. This study is an amendment to the 2013 Missouri River Flood Response and Action Plan. It includes any changes to temporary or semi-permanent flood protection measures that were implemented in 2012 and 2013, including any revised levee elevations, removal of temporary levees, road grade raises and closure structures. This amendment identifies one ice jam scenario and two open water flood scenarios. It then identifies the trigger points for the protective measures including equipment and materials that will be mobilized to fight the flood should it occur in 2014.

Background

Two recent Missouri River flood events resulted in significant physical damage and economic harm to private citizens and local government entities. In March 2009, an ice jam on the Missouri River threatened much of South Bismarck. In the summer of 2011, South Bismarck experienced a major Missouri River open water flood caused by unprecedented precipitation and runoff from above normal basin snowpack. In 2011, a series of publicly constructed levees were built to protect much of the City; however exclusively private efforts protected much of the Southport area from overland flooding.

As a result of its experiences in the 2009 and 2011 flood events, the City is conducting appropriate planning for a potential 2014 flood event. The 2014 Flood Response and Action Plan is intended to provide clear direction for both City staff and private volunteers to execute a coordinated flood fighting response, in advance of an ice jam or open water flood.

Ground water migration and impacts will not be addressed in this report.

Data Collection

Data for the 2012 and 2013 Missouri River Flood Response and Action Plans came from two general sources: public input and technical data from public agencies. This amendment to the 2013 plan only includes the technical data.

Data from Public Agencies

Both flood events generated a wealth of technical data from local, state and federal agencies. Public Agency data that was collected by the Project Team came from the following sources;

- US Geological Survey (USGS) Missouri River Bismarck Gage Data
- ND State Water Commission
  - FEMA Flood Insurance Study – Burleigh County
- ND Department of Emergency Services
  - 2011 Flood Photo
  - Post 2011 Flood Photo
  - Various inundation mapping
  - Levee alignments/locations
  - FEMA DFIRM Database – Burleigh County
- City of Bismarck Engineering and Public Works Departments
  - 2011 stormwater pumping locations and pump sizes
  - GIS Dataset
  - 2011 levee elevations
  - Various 2011 high water survey elevations
  - 2011 levee construction costs and temporary pumping costs
- Burleigh County
  - Flood Annex Plan

2011 Protective Measures

The 2011 temporary protective measures included approximately 4.6 miles of earthen levee and Hesco Barriers to protect much of South Bismarck from the floodwaters of the Missouri River. After the flood receded, many of the structures were left in place for potential flood events in 2012 and 2013. The remaining 2011 temporary protective measures were removed in 2013.

Additional levees were installed by Burleigh County along England Street and 48th Avenue South. These levees also protected South Bismarck and have been completely removed.

Existing Protective Measures – See Figure 1

Additional ice jam protection measures were installed in 2012 by Burleigh County. The grade of Tavis Road has been raised to a flood stage of 20-feet and a flood control gate has been installed. The gate actuator does not have power; however the gate can be manually operated.

A new control gate was also installed on Whisper Drive to prevent flood waters from within Whispering Bay from flooding east into the Traynor Drive area south of Mills Avenue.

A new river gaging station has been installed by the USGS to collect river elevation data for both open water and ice covered periods on the Missouri River. The USGS installed the stage gage near Fort Lincoln on the west side of the river (USGS 06349070, Missouri River below Mandan, ND). This gage will provide timely stage information for South Bismarck.

In 2013, the City of Bismarck began the construction of the Riverwood Drive and Mills Ave reconstruction projects. These projects included grade raises of the existing roadways to a flood stage of 20-feet. Riverwood Drive was completed from Expressway Ave to the north entrance of Southport Loop. The grade raise portion of Mills Avenue was completed; however final paving will be completed in 2014. The project included several control structures with sluice gates located on the storm water outfalls and a control structure on the Mills Avenue causeway. The new sluice gates and control structure are operational and ready to be manually closed during a flood event.

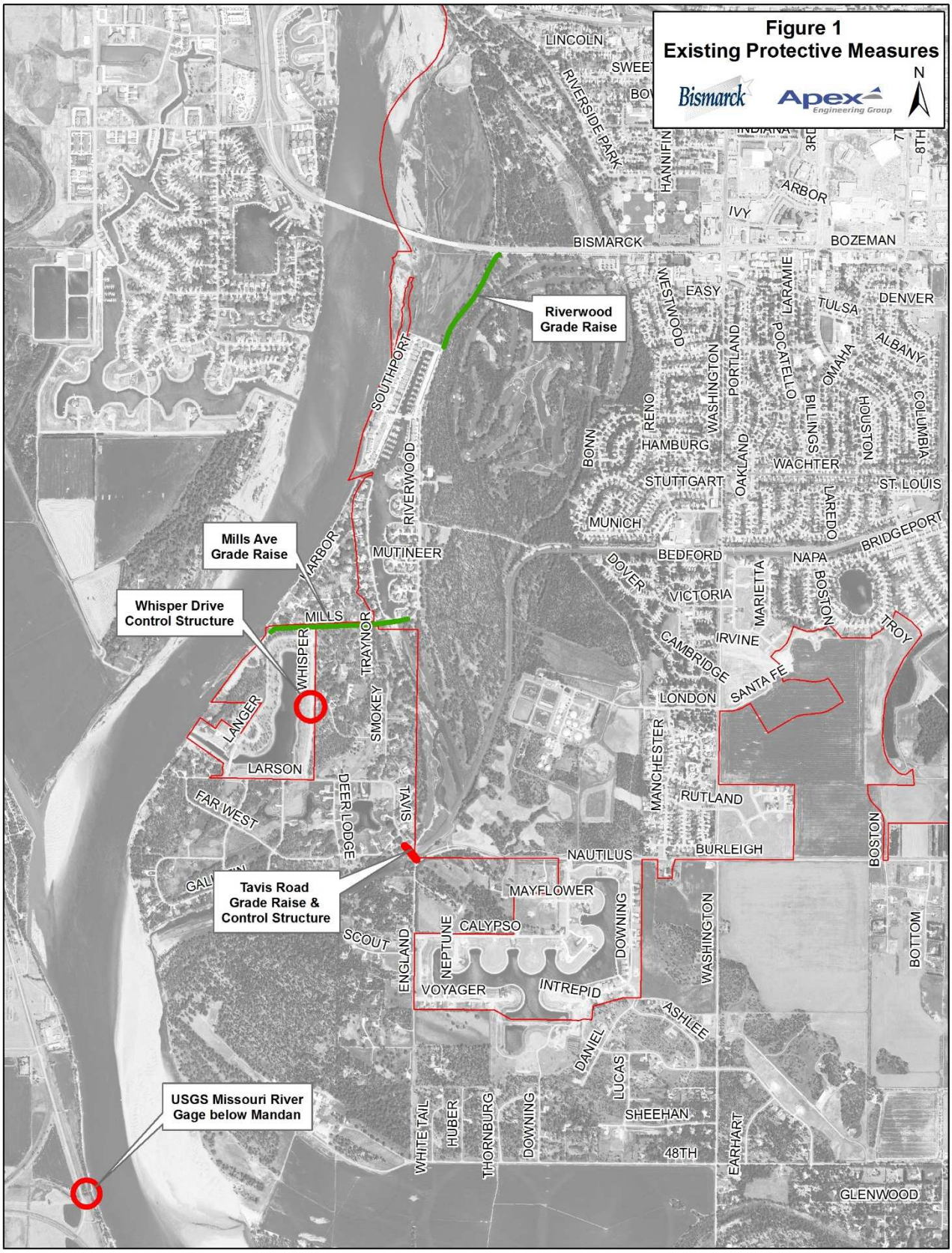
Figure 1
Existing Protective Measures
Bismarck
Apex Engineering Group
N
Riverwood Grade Raise
Mills Ave Grade Raise
Whisper Drive Control Structure
Tavis Road Grade Raise & Control Structure
USGS Missouri River Gage below Mandan
LINCOLN
SWEET
RIVERSIDE PARK
HANNIFIN
ARBOR
IVY
BISMARCK
BOZEMAN
WESTWOOD
EASY
LARAMIE
TULSA
DENVER
SOUTHPORT
PORTLAND
POCATELLO
OMAHA
ALBANY
RENO
WASHINGTON
BILLINGS
HOUSTON
COLUMBIA
BONN
HAMBURG
OAKLAND
WACHTER
STUTTGART
ST. LOUIS
RIVERWOOD
MUNICH
LAREDO
BRIDGEPORT
ARBOR
MUTINEER
BEDFORD
NAPA
DOVER
VICTORIA
MARIETTA
BOSTON
TROY
MILLS
IRVINE
CAMBRIDGE
SANTA FE
WHISPER
TRAYNOR
LONDON
LANGER
SMOKEY
MANCHESTER
LARSON
RUTLAND
FAR WEST
DEER LODGE
TAVIS
NAUTILUS
BURLEIGH
BOSTON
MAYFLOWER
DOWNING
WASHINGTON
SCOUT
CALYPSO
NEPTUNE
BOTTOM
ENGLAND
VOYAGER
INTREPID
ASHLEE
DANIEL
LUCAS
WHITE TAIL
HUBER
THORNBURG
DOWNING
SHEEHAN
48TH
EARHART
GLENWOOD

2014 Action Plan

The technical data and public perceptions collected during the 2012 study phase were used to prepare the 2012 Flood Response and Action Plan. The technical data will be updated in this amendment for City officials and the public to use as a guide for the execution of a coordinated flood fight, should it become necessary to do so in 2014.

Plan Development

The location of temporary protective measures was determined based on the observed 2009 ice jam event and 2011 open water flood event as well as the recent construction of several protection projects. Burleigh County's flood protective measures were taken into account in the development of this plan. Opinion of costs were developed for the various action plans based on the 2011 levee construction and removal costs and the 2011 internal drainage pumping costs. The opinion of costs were updated to reflect cost increases since 2011.

Critical elements of the action plan include:

- Observation and monitoring of Missouri River conditions that may indicate an impending flood. The continued monitoring of ice conditions, both on the Missouri River and the Heart River, are a critical element of the plan.
- Review of flood forecasts.
- Snow and rainfall data in the Missouri River basin upstream of Bismarck.
- Trigger Points that initiate specific flood responses and actions.
    - Ice jam alerts.
    - River stage readings.
    - Garrison Dam release schedules.

The Recommended Action Plans for the Three Designated Flood Scenarios are found on the following pages.

Ice Jam Flood

The temporary protective measures for an ice jam are more difficult to implement than those of a standard open water flood. This is primarily due to the limited response time to implement protective measures. For instance, during the 2009 ice jam the stage on the Missouri River began dropping within 36-hours after the formation of the jam. The unpredictability of an ice jam in terms of the location, timing and stage of the river upstream of the jam make it very difficult to plan the temporary protective measures. The 2009 ice jam stages were used as the baseline for determining temporary protective measures for the City of Bismarck; however the 2011 flood caused major scouring of the main channel and large amounts of sand deposition within the main channel overbanks, which makes predicting an ice jam similar to 2009 very difficult. The new river channel system will have to be monitored closely during a future ice jam to determine the temporary protective measures that should be implemented.

Four primary trigger points have been identified in terms of a potential ice jam:

- Forecast – temperature and precipitation.
- Monitoring of the river conditions – the stage of the river needs to be closely monitored at various locations throughout Bismarck and Burleigh County.
- Tributary ice pack monitoring – the Heart River ice pack and ice melt should be closely monitored as snow melt or ice out precipitation events occur.
- Water surface elevations in South Bismarck are higher than expected in relation to the USGS Bismarck Gage reading.

Ice Jam Temporary Protective Measures (see Figure 2)

Trigger:

- River Stage 12.0 ft. at the Bismarck Gage *or* a corresponding water surface elevation of 1631.5 NAVD 88 in South Bismarck *(stage increase happens unusually fast followed by a continuing rise at both the Bismarck gage and the gage south of Mandan)*

Actions:

- Activate Emergency Operations Center
- Ice Jam Alert: Issue a public announcement for potential flooding and prepare a call for sandbagging volunteers.
- Closure of Stormwater Structures
  - Coordinate with Burleigh County on the closure of the Whisper Drive and Tavis Road gate structures.
  - Closure of the four gates on Mills Avenue (Gates to be operated by Contractor)
  - Closure of the one gate on Riverwood Drive (Gate to be operated by Contractor)

- Additional pumps and plugs will be called for to provide additional pumping capacity as needed to control internal drainage.

- Mobilize equipment to haul and spread fill or to install AquaFence the between Southport Loop intersections.

Trigger:

- River Stage 14.0 ft. at the Bismarck Gage or a corresponding water surface elevation of 1633.0 NAVD 88 in Southport Bay

Actions:

- Riverwood Drive
  - To prevent overtopping of Riverwood Drive between the Southport Loop intersections, a small earthen levee will be constructed between the Southport Loop intersections. The temporary levee will be constructed on the west side of Riverwood Drive in the public right-of-way. This protection could also be constructed with a temporary flood barrier such as AquaFence.
- Tavis Road/England Street
  - Coordinate and monitor with Burleigh County on Tavis Road and England Street and possibly mobilize sandbagging to prevent overtopping.
- Plug storm water outfalls on Riverwood Drive in the Southport area.
- Close stormwater outfall gates from Expressway Avenue north
- Install effluent pumping from the Wastewater Treatment Facility into the Tavis Road backwater area.
- Mobilize volunteer sand bags to be filled at EOC designated locations.

The **total estimated costs** of installation and removal of the identified temporary protective measures for the **Ice Jam Temporary Protective Measures is $110,000**.

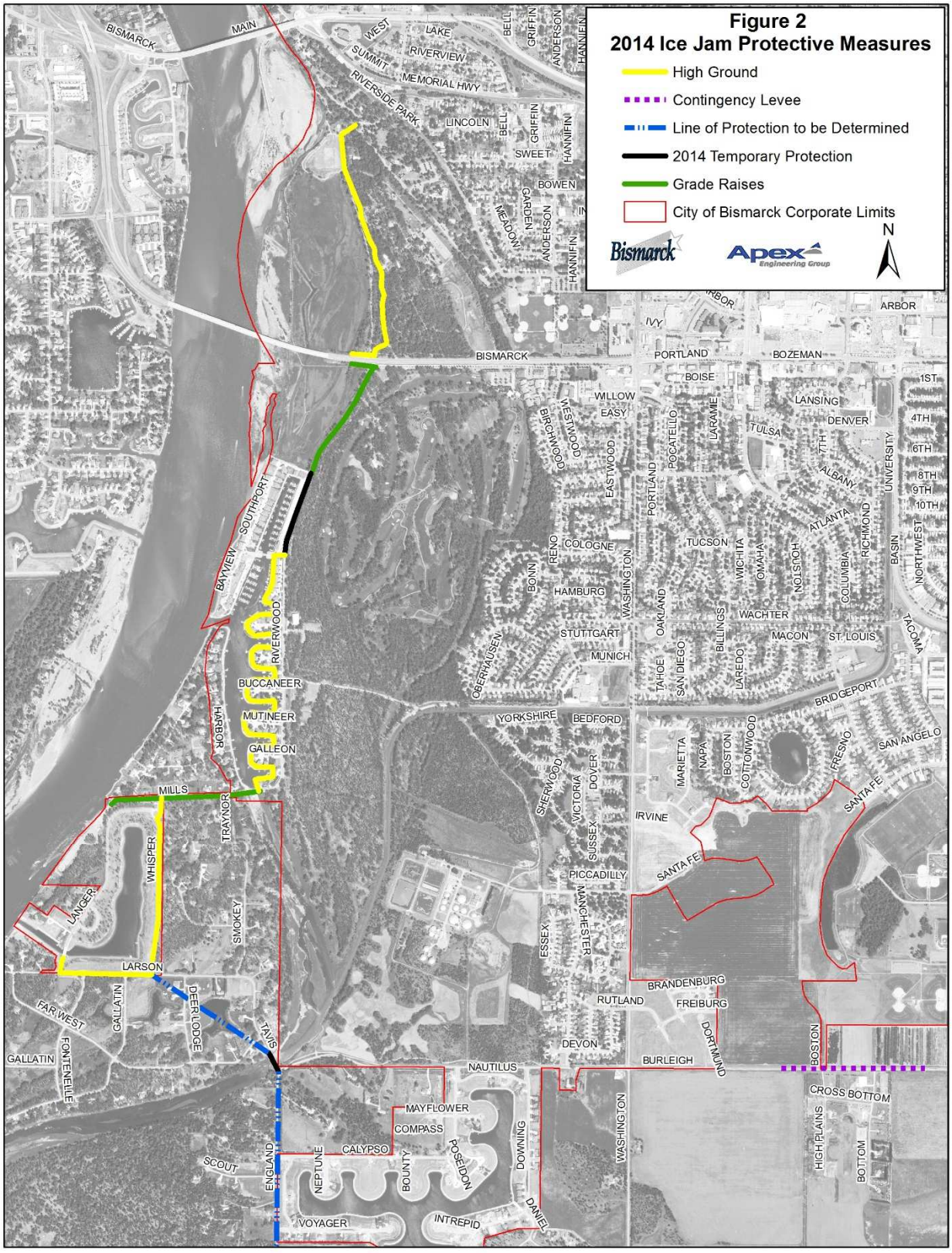
Figure 2
2014 Ice Jam Protective Measures
High Ground
Contingency Levee
Line of Protection to be Determined
2014 Temporary Protection
Grade Raises
City of Bismarck Corporate Limits
Bismarck
Apex Engineering Group
N
BISMARCK
MAIN
WEST
LAKE
RIVERVIEW
SUMMIT
MEMORIAL HWY
RIVERSIDE PARK
LINCOLN
BELL
GRIFFIN
ANDERSON
HANNIFIN
SWEET
BOWEN
MEADOW
GARDEN
IVY
ARBOR
PORTLAND
BOZEMAN
BOISE
WILLOW
EASY
LANSING
DENVER
TULSA
1ST
4TH
6TH
7TH
8TH
9TH
10TH
ALBANY
UNIVERSITY
EASTWOOD
PORTLAND
POCATELLO
LARAMIE
BIRCHWOOD
COOLIDGE
WESTWOOD
SOUTHPORT
BAYVIEW
RIVERWOOD
BUCCANEER
MUTINEER
GALLEON
HARBOR
MILLS
TRAYNOR
WHISPER
LANGER
SMOKEY
LARSON
DEER LODGE
FAR WEST
GALLATIN
FONTENELLE
SCOUT
ENGLAND
NEPTUNE
CALYPSO
BOUNTY
POSEIDON
DOWNING
MAYFLOWER
COMPASS
NAUTILUS
VOYAGER
INTREPID
DANIEL
WASHINGTON
DEVON
BURLEIGH
DORTMUND
RUTLAND
FREIBURG
BRANDENBURG
PICCADILLY
MANCHESTER
ESSEX
SUSSEX
VICTORIA
DOVER
SHERWOOD
YORKSHIRE
BEDFORD
IRVINE
SANTA FE
MARIETTA
NAPA
BOSTON
COTTONWOOD
FRESNO
SAN ANGELO
BRIDGEPORT
TACOMA
NORTHWEST
BASIN
RICHMOND
COLUMBIA
NORFOLK
OMAHA
WICHITA
TUCSON
ATLANTA
WACHTER
MACON
ST. LOUIS
BILLINGS
LAREDO
TAHOE
SAN DIEGO
OAKLAND
WASHINGTON
HAMBURG
COLOGNE
RENO
BONN
STUTTGART
MUNICH
OBERHAUSEN
CROSS BOTTOM
HIGH PLAINS
BOTTOM

Open Water Floods

The planning and implementation of temporary protective measures is normally more achievable during the standard open water flood due to the advanced warnings and the published release schedules from Garrison Dam. The buffer of Garrison Dam, or delay of above normal releases from Garrison Dam, allows time for the protective measures to be planned and constructed. For this report, it is assumed that sufficient time is available to construct temporary protective measures for the open water flood event.

In the 2011 event, flood protection measures were initiated immediately after high releases from Garrison Dam were announced by the US Army Corps of Engineers. In this instance, the announcement of higher releases allowed time for the construction of temporary measures; however, this may not be the case in all open water flood situations. The situation can exist that the reservoir is full, and the Corps does not anticipate increasing/releasing flows that would cause flood stages through Bismarck. In this situation, preliminary planning and implementation of the action plan may still be prudent as a full reservoir and a major precipitation event immediately upstream of the Garrison Dam could cause a flood event without sufficient time to construct temporary protective measures.

Missouri River Stages

The 2011 temporary flood protection measures were constructed to a certain flood stage (elevation) and adjusted accordingly along the river to match the anticipated river profile developed for the 2005 FEMA Flood Insurance Study (FIS). At the time of implementing the 2011 temporary measures, the FEMA FIS was the best available data. The 2011 observed river profile stages did not match the FEMA FIS profile; therefore the observed river profile stages will be used for planning temporary protective measures.

Temporary protective measures were investigated for flood stages of 16-feet and 20-feet. The actual observed 2011 river flood event profile was used as the baseline profile. The 2011 flood event resulted in a peak stage of 19.3-feet at the Bismarck Gage; therefore the 16-foot and 20-foot profiles were adjusted -3.3 and +0.7-feet respectively.

Burleigh County Flood Protection

Burleigh County installed a gate well control structure and grade raise at Tavis Road in 2012. This flood protection was identified as Project Number 22 and was constructed to the 20-foot flood stage. The flood control gate was installed in 2012 and will be functional for an open water flood. This flood control structure will be utilized in future flood fights and has been included in this 2014 flood response plan for open water floods.

Burleigh County also started construction of the 48th Avenue grade raise which was identified in their Flood Annex Plan as the line of future projection. Burleigh County is also identifying various permanent flood protection measures from Tavis Road to Whisper Drive and from Tavis Road to 48th Avenue. The exact location of these temporary protective measures will be identified immediately if an open water flood is predicted.

Open Water Flood - 16 ft. Stage

Properties within Southport do not experience overland flooding from a stage of 16-feet event; therefore, the closure of the Southport inlet is not required to prevent overland flooding from a 16-ft stage open water flood. However, preventing overtopping of Riverwood Drive is *essential* to maintain access to Southport.

Trigger:

- The flood response and action plan is initiated immediately after the announcement of high releases from Garrison Dam that are forecast to produce a flood stage of 16 ft. in Bismarck.

Actions: *(see Figure 3)*

- Alert City Officials when river stage reaches 12.0 ft. concurrently with a forecast of future stage increases.
- Activate Emergency Operations Center.
- Mobilize volunteers to fill sand bags at EOC designated locations.
- Area north of Expressway Avenue
  - The existing ground through this area is higher than stage 16, but shall be monitored closely during such event.
- Riverwood Drive
  - To prevent overtopping of Riverwood Drive between the Southport Loop intersections, a small earthen levee will be constructed between the Southport Loop intersections. The temporary levee will be constructed on the west side of Riverwood Drive in the public right-of-way. This protection could also be constructed with a temporary flood barrier such as AquaFence.

- Coordinate with Burleigh County on the closure of the Whisper Drive and Tavis Road gate structures.

- Internal Drainage
  - See Pages 16-17 for the Internal Drainage plan common to both the 16-foot and 20-foot open water stages. The Internal Drainage plan includes the gate closures.
- Bismarck property not protected
  - Sandbags will be provided for any properties outside of the protected area.
- During the flood.
  - Provide dike patrols.
  - 24 hour alert for changing conditions.
  - Deliver sandbags to local problem points

The **total estimated costs** of installation and removal of the identified temporary protective measures for the **16 ft. Stage Open Water Flood is $840,000**.

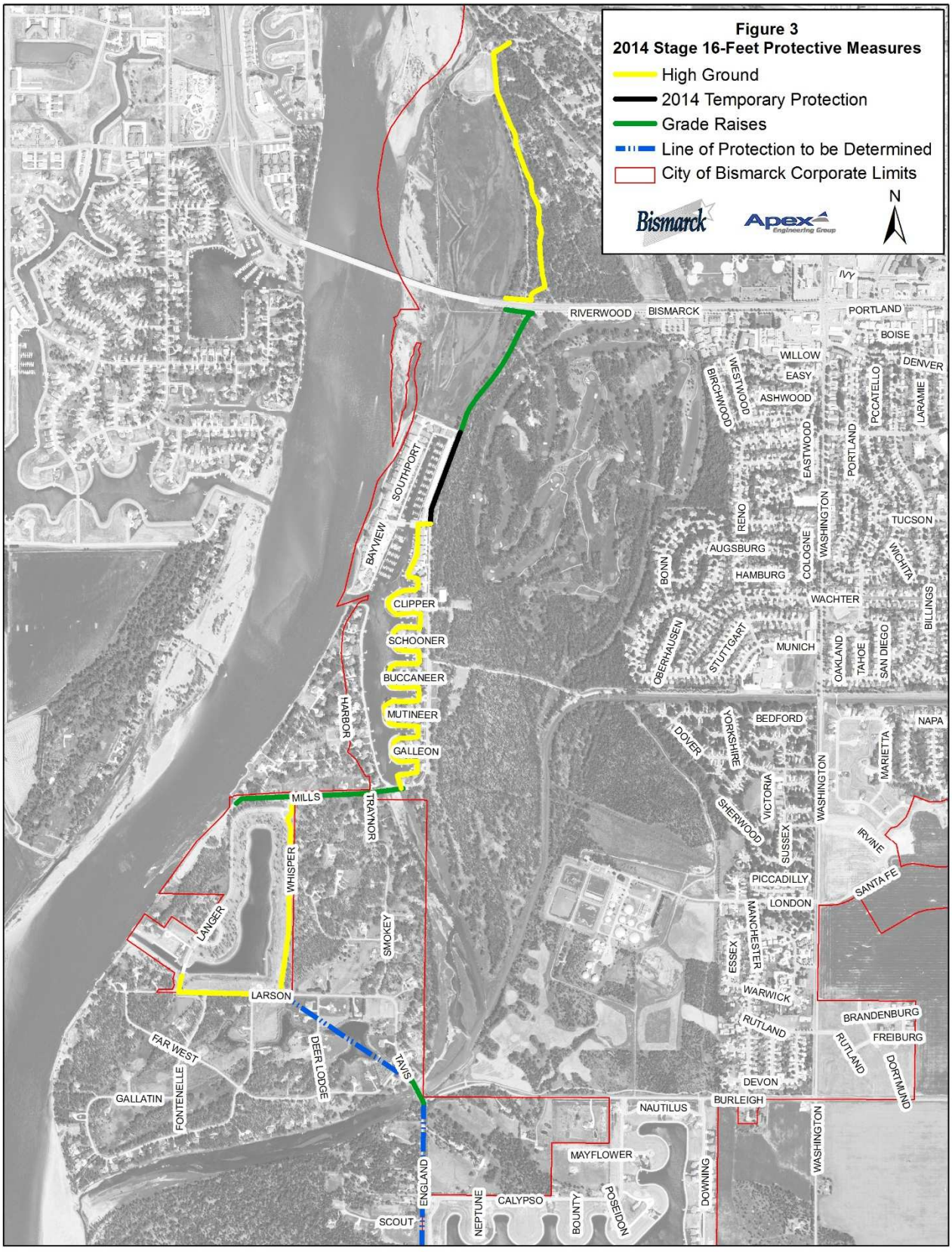
Figure 3
2014 Stage 16-Feet Protective Measures
High Ground
2014 Temporary Protection
Grade Raises
Line of Protection to be Determined
City of Bismarck Corporate Limits
Bismarck
Apex Engineering Group
N
RIVERWOOD
BISMARCK
IVY
PORTLAND
BOISE
DENVER
WILLOW
EASY
ASHWOOD
BIRCHWOOD
WESTWOOD
PCCATELLO
LARAMIE
EASTWOOD
PORTLAND
WASHINGTON
TUCSON
WICHITA
BILLINGS
RENO
AUGSBURG
HAMBURG
COLOGNE
BONN
WACHTER
MUNICH
OBERHAUSEN
STUTTGART
OAKLAND
TAHOE
SAN DIEGO
SOUTHPORT
BAYVIEW
CLIPPER
SCHOONER
BUCCANEER
MUTINEER
GALLEON
HARBOR
BEDFORD
NAPA
DOVER
YORKSHIRE
MARIETTA
VICTORIA
SHERWOOD
SUSSEX
IRVINE
SANTA FE
PICCADILLY
LONDON
MANCHESTER
ESSEX
WARWICK
RUTLAND
BRANDENBURG
FREIBURG
DORTMUND
DEVON
BURLEIGH
NAUTILUS
MAYFLOWER
DOWNING
POSEIDON
BOUNTY
CALYPSO
NEPTUNE
ENGLAND
SCOUT
MILLS
TRAYNOR
WHISPER
LANGER
SMOKEY
LARSON
DEER LODGE
TAVIS
FAR WEST
FONTENELLE
GALLATIN

Open Water Flood - 20 ft. Stage

Trigger:

- The flood response and action plan is initiated immediately after the announcement of high releases from Garrison Dam that are forecast to produce a flood stage of 20 ft. in Bismarck.

Actions: *(see Figure 4)*

- Alert City Officials when river stage reaches 12.0 ft. concurrently with a forecast of future stage increases.
- Activate Emergency Operations Center
- Mobilize volunteers to fill sand bags at EOC designated locations.
- Area north of Expressway Ave
  - This area was identified as Segment A in the 2011 open water flood event. Only a small portion of the temporarily constructed protective measure had water against the levee at the peak stage of 19.3. A small earthen levee or HESCOE barriers will be constructed in this reach along the similar alignment as 2011.
- Riverwood Drive
  - This area was identified as Segment B in the 2011 open water flood event. The newly constructed grade raise allows for the installation of HESCOE barriers on the west side of the roadway while maintaining access on Riverwood Drive.
- Southport Levee and Closure of Southport Inlet
  - An earthen barrier or HESCO barrier or sandbag levee will be constructed along the north side of Southport Loop to the river side of Southport and extended south to the bay inlet.
  - The culvert through the north leg of Southport Loop that provides freshening water to Southport Bay will be plugged for the duration of the flood.
  - The property located on the northwest corner of Southport will receive sandbags for flood protection due to the close proximity to the bank on the north side of the structure.
  - The Southport inlet will be closed with a sheet piling plug.
  - An earthen barrier or HESCO barrier or sandbag will be constructed along the westerly perimeter of Southport along the northern portion of Harbor Drive immediately south of the Southport Bay inlet. Burleigh County has identified constructing a protective measures Harbor Drive south to Mills Avenue in their Flood Annex.
- Coordinate with Burleigh County on the closure of the Whisper Drive and Tavis Road gate structures.
- Internal Drainage
  - See Pages 16-17 for the Internal Drainage plan common to both the 16-foot and 20-foot stage open water flood events. The Internal Drainage plan includes the gate closures.

- Bismarck property not protected
  - Sandbags will be provided for any properties outside of the protected area.
- **During the flood.**
  - Provide dike patrols.
  - 24 hour alert for changing conditions.
  - Deliver sandbags to local problem points

The **total estimated costs** of installation and removal of the identified temporary protective measures for the **20 Ft. Stage Open Water Flood is $5,360,000**.

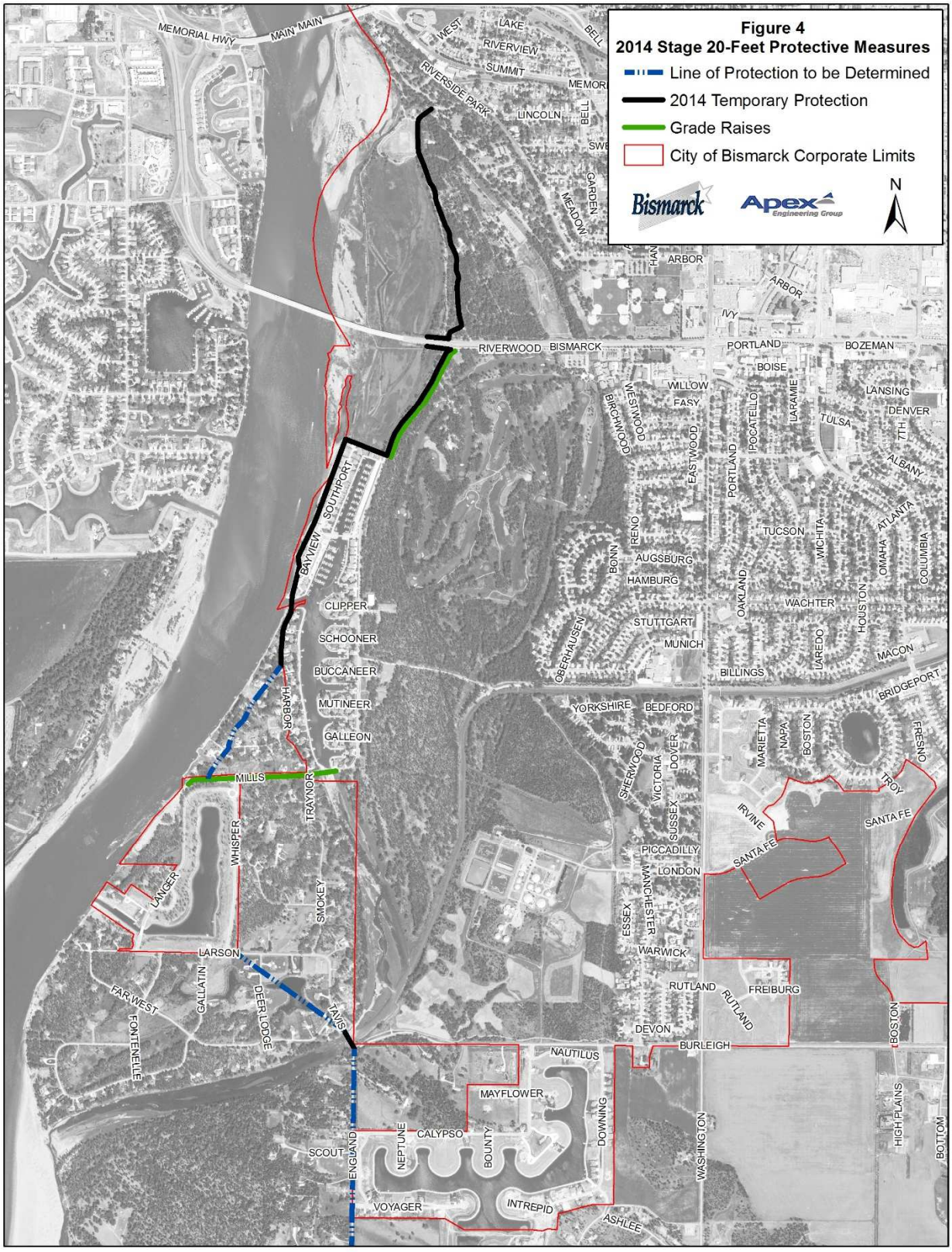
Figure 4
2014 Stage 20-Feet Protective Measures
Line of Protection to be Determined
2014 Temporary Protection
Grade Raises
City of Bismarck Corporate Limits
Bismarck
Apex Engineering Group
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MEMORIAL HWY
MAIN
WEST
LAKE
RIVERVIEW
SUMMIT
RIVERSIDE PARK
LINCOLN
BELL
GARDEN
MEADOW
ARBOR
IVY
RIVERWOOD
BISMARCK
PORTLAND
BOISE
BOZEMAN
WILLOW
FASY
WESTWOOD
BIRCHWOOD
EASTWOOD
POCATELLO
LARAMIE
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MUNICH
OBERHAUSEN
SOUTHPORT
BAYVIEW
CLIPPER
SCHOONER
BUCCANEER
MUTINEER
GALLEON
HARBOR
MILLS
TRAYNOR
WHISPER
LANGER
SMOKEY
LARSON
FAR WEST
FONTENELLE
GALLATIN
DEER LODGE
TAVIS
ENGLAND
SCOUT
NEPTUNE
CALYPSO
BOUNTY
MAYFLOWER
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DOWNING
VOYAGER
INTREPID
ASHLEE
WASHINGTON
DEVON
BURLEIGH
RUTLAND
FREIBURG
WARWICK
ESSEX
MANCHESTER
PICCADILLY
LONDON
SUSSEX
VICTORIA
DOVER
SHERWOOD
YORKSHIRE
BEDFORD
MARIETTA
NAPA
BOSTON
FRESNO
TROY
IRVINE
SANTA FE
HIGH PLAINS
BOTTOM

Open Water Flood Events - Internal Drainage *(see Figure 5)*

Figure 5 identifies the major storm water plugging and pumping locations and the minor pumping locations. Site Number 8 at Tavis Road includes a stormwater pump station, which is currently under construction. The Tavis Road storm water pump station should be usable for an open water flood. All other internal drainage must be pumped utilizing temporary portable pumps. The gates located in Riverwood Drive and Mills Avenue are to be operated by the Contractor. The recommended pump sizes are based on discussions with City staff about the 2011 pumping. The opinion of costs for the 16-ft and 20-ft stage open water floods includes the temporary plugging, pumping, and operation and maintenance for three months.

Site	Temporary Pumps
1	2-8” Pumps
2	2-8” Pumps
3	1-6” Pump & 1-8” Pump
4	2-3” Pumps
5	1-6” Pumps
6	1-10” Pump
7	WW Treatment Plant 2-6” Pumps

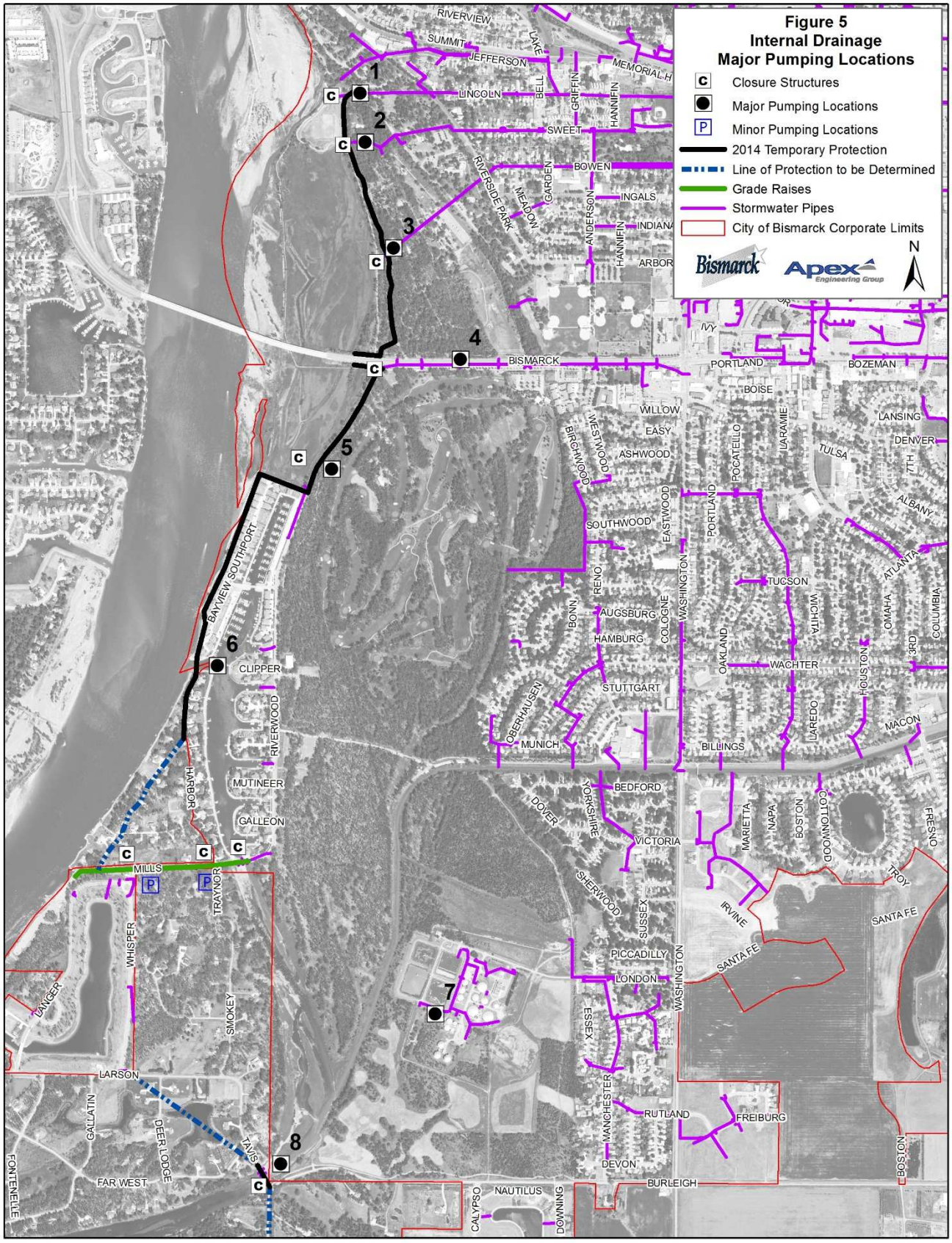
Figure 5
Internal Drainage
Major Pumping Locations
Closure Structures
Major Pumping Locations
Minor Pumping Locations
2014 Temporary Protection
Line of Protection to be Determined
Grade Raises
Stormwater Pipes
City of Bismarck Corporate Limits
Bismarck
Apex Engineering Group
N
1
2
3
4
5
6
7
8
RIVERVIEW
SUMMIT
JEFFERSON
LINCOLN
LAKE
BELL
GRIFFIN
MEMORIAL-H
HANNIFIN
SWEET
BOWEN
INGALS
RIVERSIDE PARK
MEADOW
GARDEN
ANDERSON
INDIANA
ARBOR
BISMARCK
IVY
PORTLAND
BOZEMAN
BOISE
WILLOW
EASY
ASHWOOD
WESTWOOD
BIRCHWOOD
POCATELLO
LARAMIE
LANSING
DENVER
TULSA
17TH
ALBANY
SOUTHWOOD
EASTWOOD
ATLANTA
TUCSON
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WASHINGTON
MICHIGAN
OMAHA
COLUMBIA
HAMBURG
OAKLAND
WACHTER
3RD
HOUSTON
STUTTGART
OBERHAUSEN
LAREDO
MACON
MUNICH
BILLINGS
BEDFORD
YORKSHIRE
DOVER
VICTORIA
MARIETTA
NAPA
BOSTON
COTTONWOOD
FRESNO
TROY
SHERWOOD
SUSSEX
IRVINE
SANTA FE
PICCADILLY
LONDON
ESSEX
MANCHESTER
RUTLAND
FREIBURG
DEVON
BURLEIGH
NAUTILUS
CALYPSO
DOWNING
BOSTON
CLIPPER
BAYVIEW SOUTHPORT
RIVERWOOD
HARBOR
MUTINEER
GALLEON
MILLS
TRAYNOR
WHISPER
LANGER
SMOKEY
LARSON
GALLATIN
DEER LODGE
TAVIS
FONTENELLE
FAR WEST

Communication Plan

During all flood scenarios identified in the report, internal communication, plus timely and accurate reports to the public is imperative. We recommend that the City of Bismarck EOC Emergency Public Information Group as adopted December 6, 2010 be activated and implemented as soon as a flood threat is identified.

Coordination with Burleigh County

The various components of the three flood scenarios outlined in this plan, are contingent on the actions taken by Burleigh County in the Fox Island area and south of Burleigh Avenue. Burleigh County has adopted a temporary protection plan. Because the first lines of flood defense are west and south of the City boundaries on Fox Island, the various components of the three flood scenarios outlined in this plan, are contingent on the actions taken by Burleigh County. A City/County coordinated plan in this area will avoid duplication of flood fighting efforts and eliminate unnecessary sandbagging behind the levee system.

Evacuation Plan

In the event of a major flood that requires the evacuation of a large portion of South Bismarck, a plan should be in place that coordinates the orderly evacuation of residents. The plan would be under the direction and control of the Bismarck Police Department, who would execute road closures and temporary one-way travel on key arterials during the evacuation process.

A second element of the evacuation plan would involve the shut-down of critical water and sewer services in the evacuated areas to preserve the integrity of underground infrastructure.